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10/673,797	09/29/2003	Aleksey Isarov	03-212	2978

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EXAMINER

PEELY, MICHAEL J

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 11/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/673,797

Applicant(s)

ISAROV ET AL.

Examiner

Michael J. Feely

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-17 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language;

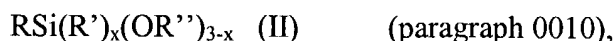
or

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1, 2, 4-6, 8-10, 13-15, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Amano et al. (Pub. No.: US 2003/0027896 A1).

Regarding claims 1, 2, 4-6, 8, and 9, Amano et al. disclose: *(I)* a silica substrate treated with a polysiloxane and an organosilane (paragraphs 0006 and 0020), wherein the organosilane is described by the formula:



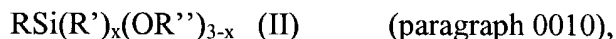
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wherein: R is a long-chain hydrocarbon group having between about 8 and 30 carbon atoms, and optionally contains organofunctional groups selected from the group consisting of vinyl, methacryl, amino, sulfur, and epoxy groups (paragraph 0012); wherein R' and R'' are independently selected from the group consisting of a methyl and an ethyl (paragraph 0012); and wherein X is either 0 or 1 (paragraph 0010); **(2)** wherein the silica has a BET specific surface area of from about 50 to about 150 m²/g (paragraph 0021); **(4)** wherein the organosilane is a hexadecyltrimethoxysilane (paragraphs 0010-0012, 0054, and 0055); **(5)** wherein the silica is selected from the group consisting of silica gel, metal silicate, precipitated silica, and fumed silica (paragraphs 0020-0021); **(6)** wherein the silica is selected from the group consisting of precipitated silica and fumed silica (paragraphs 0020-0021); **(8)** wherein the polysiloxane has the formula *see claim for chemical structure* (paragraphs 0007-0009); and **(9)** wherein the polysiloxane is polydimethylsiloxane (paragraph 0009).

Regarding claims 10 and 13, Amano et al. disclose: **(10)** a method of preparing a treated silica substrate (paragraphs 0016 and 0020) comprising the steps of:

- a) providing silica particles (paragraphs 0016 and 0020);
- b) contacting the silica particles with a polysiloxane (paragraphs 0016 and 0020); and
- c) contacting the silica particles with an organosilane (paragraphs 0016 and 0020); and

(13) wherein the organosilane is described by the formula:

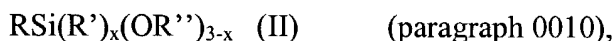


wherein: R is a long-chain hydrocarbon group having between about 8 and 30 carbon atoms, and optionally contains organofunctional groups selected from the group consisting of vinyl, methacryl, amino, sulfur, and epoxy groups (paragraph 0012); wherein R' and R'' are

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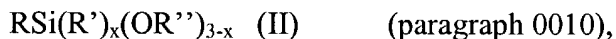
independently selected from the group consisting of a methyl and an ethyl (paragraph 0012); and wherein X is either 0 or 1 (paragraph 0010).

Regarding claims 14 and 15, Amano et al. disclose: **(14)** a polymer composition (paragraph 0018) comprising a silica substrate treated with a polysiloxane and an organosilane (paragraphs 0006 and 0020), wherein the organosilane is described by the formula:



wherein: R is a long-chain hydrocarbon group having between about 8 and 30 carbon atoms, and optionally contains organofunctional groups selected from the group consisting of vinyl, methacryl, amino, sulfur, and epoxy groups (paragraph 0012); wherein R' and R'' are independently selected from the group consisting of a methyl and an ethyl (paragraph 0012); and wherein X is either 0 or 1 (paragraph 0010); and **(15)** further comprising a polymer selected from the group consisting of epoxy resins, polyurethanes, polyesters, silicones, and hydrocarbon oils (paragraph 0018).

Regarding claim 17, Amano et al. disclose: **(17)** a composition (paragraph 0018) comprising a silica substrate treated with a polysiloxane and an organosilane (paragraphs 0006 and 0020), wherein the organosilane is described by the formula:



wherein: R is a long-chain hydrocarbon group having between about 8 and 30 carbon atoms, and optionally contains organofunctional groups selected from the group consisting of vinyl, methacryl, amino, sulfur, and epoxy groups (paragraph 0012); wherein R' and R'' are independently selected from the group consisting of a methyl and an ethyl (paragraph 0012); and wherein X is either 0 or 1 (paragraph 0010).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amano et al. (Pub. No.: US 2003/0027896 A1).

Regarding claim 16, Amano et al. disclose that their surface treated silica is used to increase thixotropy at the time of kneading in a polar resin, such as urethane resins, epoxy resins, acrylic resins, unsaturated polyester resins, vinyl ester resins, and silicone resins (paragraphs 0005 and 0018). However, they do not explicitly disclose that their polymer composition has **(16)** a STI (shear thinning index) of from about 1.2 to about 100, preferably about 1.4 to about 5.

It should be noted that the STI is a result of material selection and proportions, and it is an indicator of thixotropy. Amano et al. use the same materials used in the instant invention; however, they are silent regarding proportions. They do demonstrate that the presence of treated silica is a result effective variable that influences the thixotropy of a resin system. In light of this, it has been found that, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." - *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add treated silica, in the composition of Amano et al., in an amount to yield a STI of

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from about 1.2 to about 100 because Amano et al. establishes that the presence of treated silica is a result effective variable that influences the thixotropy of a resin system.

5. Claims 3, 7, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano et al. (Pub. No.: US 2003/0027896 A1) in view of Menon et al. (US Pat. No. 6,344,240).

Regarding claims 3, 7, and 12, Amano et al. disclose that the inorganic oxide used in their invention includes silica having a BET surface area of from 100 to 400 m²/g (paragraph 0020), wherein the silica is preferably a fumed silica (paragraph 0021); however, they do not explicitly disclose: (3) wherein the silica has an average particle size of from about 2 to about 10 microns; and (7 & 12) wherein the silica is precipitated silica.

Menon et al. disclose a similar treated silica, wherein, “dry silica is contacted with a reaction medium consisting essentially of concentrated aqueous acid and a hydrophobing agent selected from the group consisting of organosiloxanes and organochlorosilanes,” (Abstract), wherein, “Exemplary of those dry silicas include *fumed silica and precipitated silica*,” (column 3, lines 39-40). They also disclose, “Fumed silica is a material having a relatively small particle size, about 2-20 nm,” (column 1, lines 24-25) and, “Precipitated silica is a particulate that can have an average diameter of from *about 2 nm to greater than about 1 μm*,” (column 1, lines 32-33).

The disclosure of Menon et al. demonstrates that precipitated silica satisfies the average particle size range of the claimed invention. Furthermore, the disclosure of Menon et al. demonstrates that precipitates silica, along with fumed silica, are known in the art as suitable silica substrates to be treated with organosilicon materials. In light of this, it has been found that

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the selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination – see *MPEP 2144.07*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use precipitated silica having an average particle size of from about 2 to about 10 microns, as taught by Menon et al., in the instant invention of Amano et al. because Menon et al. demonstrate that precipitated silica, along with fumed silica, are known in the art as suitable silica substrates to be treated with organosilicon materials, wherein precipitated silica is categorized as a material having an average diameter of from about 2 nm to greater than about 1 μm .

Allowable Subject Matter

6. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 11, Amano et al. do not disclose a sequence of steps wherein the silica particles are first contacted with polysiloxane and then with organosilane; rather, they disclose a process wherein the silica particles are: 1) simultaneously contacted with polysiloxane and organosilane (paragraphs 0016 and 0037), or 2) first contacted with organosilane and then with polysiloxane (paragraph 0037).

It has been found that in the absence of new or unexpected results, the selection of any order of performing process steps is *prima facie* obvious – see *MPEP 2144.04 IV C*. However, in the instant case, Applicants demonstrate that this specific sequence of process steps yields

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unexpected results. A treated silica produced by the sequence of a), c), b) has better rheological performance in an epoxy resin composition than a treated silica produced by the sequence of a), b), c) – *see Specification paragraphs 0032-0033.*

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael J. Feely
Patent Examiner
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November 4, 2004